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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Jin-Wook Ha

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27387

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EXAMINER

LACLAIR, DARCY D

ART UNIT

PAPER NUMBER

4171

MAIL DATE

DELIVERY MODE

04/01/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/536,551	Applicant(s) HA ET AL.	
	Examiner Darcy D. LaClair	Art Unit 4171	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6-10-07</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1. Claim 4 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. A urethane resin is by definition a polymer formed of at least two isocyanate functional groups reacted with a monomer containing at least two alcohol functional groups (or polyol), and therefore Claim 4 constitutes a definition, rather than a statement of limitation with regard to applicant's invention.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 4, and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Hourai et al (Patent Number 4,999,545),

4. Houari et al. discloses a water soluble (col 13 line 6) thermoplastic or thermosetting paint composition comprising 3% - 100% polyurethane (preferably 50%-100%), 0%-95% diluent (preferably 0%-90%), 0% - 10% modifier (preferably 0.1% - 10%), inorganic filler 0% - 40% (preferably 0%-30%), as well as other potential additives. (col 14 line 5) They further teach that this resin system can include auxiliary agents such as flame retardants (col 10 line 0 and line

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30), as long as they do not significantly impair the properties of the resin. The paint composition taught allows for as much as 40% inorganic filler and allows significant flexibility on the composition of other organic components; these ranges are significantly analogous to the instant application. The flame retardants (often organic compounds) and flame retardant aids (typically inorganic fillers) could readily be added at 18% - 50% total weight.

5. With regard to Claim 2 and 4, Hourai teaches a variety of isocyanates (col 6 line 15-40) reacted with a polyol (taught in col 3, 4, 5) to yield a synthetic urethane resin.

6. Regarding Claim 6, they indicate that this paint can be mixed with any diluent used in the process of porous sheet formation taught previously. (col 13 line 65) They further teach methyl ethyl ketone, toluene, and alcohols as useful solvents. (col 11 line 35)

With regard to Claim 7 and 8, Hourai further teaches that the paint can be applied by soaking, brushing, spray coating, bar coating, roll coating, knife coating, gravure coating, etc., followed by drying at 30-150°C or 30-180°C. They further teach that this paint composition can be applied to the substrates such as metals, plastic, concrete, stone, lumber, paper, textiles, leathers, and so on. (col 14 line 13-30).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-8 are rejected under 35 U.S.C. 103(b) as being anticipated by Inukai et al. (US2001/0003764).

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9. Inukai et al teaches a paint composition comprising a water soluble acrylate resin (25%-75% wt of resin and solvent), a solvent or diluting agent (30%-70% wt of resin and solvent) (paragraph 59, 60), a flame retarding agent, a flame retarding aid, and an additive (paragraphs 70 and 71). Specific concentration of the flame retarding agent, flame retarding aid, and additives are not given in the disclosure; however, these are commonly utilized additives which one of ordinary skill in the art would be able to add at an appropriate concentration, determining by the process of linear experimentation a value that was large enough to have the desired effect but small enough not to significantly impair the properties of the composition.

10. With regard to claim 2 and 3, Inukai teaches a resin comprising a copolymer of (meth) acrylate monomers, monomers having an unsaturated double bond and a hydroxylalkyl group, an epoxy group, or an alkoxysilyl group, and monomers with an unsaturated double bond and a maleimide group, with 5- 50% by weight being (meth) acrylic ester monomers, making it an acrylate based resin. (see abstract) In paragraph 10 through 17 are recited a variety of (meth) acrylic monomers to be copolymerized into a final resin for use in the paint composition, which could be combined to yield any combination of polyalkylmethacrylate and alkylmethacrylate-alkylacrylate copolymers. In addition, other monomers which are taught here include esters (paragraph 19) and epoxys (paragraph 20, 32).

11. With regard to claim 2 and 4, in the case where some monomers are hydroalkyls, the resin may further include polyisocyanate compounds and polyhydric alcohols (or polyol). (paragraph 62). This would constitute a urethane resin.

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12. With regard to claim 5, Inukai teaches pigments including carbon black. The carbon black would function as a flame retardant, regardless of its effect on the visual properties of the paint composition. (paragraph 72)

13. With regard specifically to claim 6, Inukai's paint composition further contains an organic solvent, or diluting agent, including toluene or MEK between 25%-75% by weight, or alcohols between 40%-70% by weight. (see paragraph 55-50)

Claim 7 and 8 are rejected based on paragraph 73 and 74, where Inukai discloses that the paint may be applied to coat a substrate, and would then be heated to a temperature from 130°C to 200°C, which overlaps the claimed range of 80-150°C. They further prepare coated surfaces in their evaluation of coating properties (beginning at paragraph 125).

14. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hourai et al. or Inukai et al. in view of Wypych and Imahashi.

15. Hourai and Inukai teach that flame retardant and/or inorganic filler may be included in their coating composition. As disclosed in the specification in the instant application (paragraph 19), the flame retardants are part of a broad group well known in the art, and it is expected that the type of flame retardant is readily interchangeable by one of ordinary skill in the art. Among inorganic fillers, antimony of sodium, antimony trioxide, and antimony pentoxide are well known in the art as flame retardant synergists or aids. Antimony can readily be obtained in combination with paraffin wax as a binder for use in flame retardant functions as well. (p. 26-30) In addition, the inorganic compound zinc borate is a well know flame retardant (Wypych, p. 171).Imahashi (Patent Number 5,777,018) cites JP-B-57-10898 which "discloses a resin

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composition obtained by incorporating a carbon powder such as carbon black, as a flame retardant aid,” suggesting that carbon black has also been known as a flame retardant since at least the mid 1990s, and therefore it would have been obvious in a resin composition to substitute carbon black in place of the halogenated flame retardants in which can have less than desirable toxicity upon burning.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Iwase et al., Patent Number 5,449,706.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Darcy D. LaClair whose telephone number is (571)270-5462. The examiner can normally be reached on Monday-Thursday 7:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit 4174

Darcy D. LaClair
Examiner
Art Unit 4171